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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/754,392
Filing Date: January 09, 2004
Appellant(s): BISKEBORN, ROBERT GLENN

Walter W. Duft
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed September 2, 2008 appealing from the Office action mailed July 22, 2008

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

. **(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

2002/0197936	Smith	12-2002
7,113,354	Dakroub et al.	9-2006
6,239,936	Abraham et al.	5-2001
5,153,785	Muranushi et al.	10-1992

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Smith U.S. Patent Application Publication No. 2002/0197936.

Regarding claim 1, Smith discloses a method for monitoring fly height between a magnetic recording medium and a transducing head comprising calculating a magnetic spacing change value relative to the recording medium and the transducer head (paragraph 26), and adjusting the magnetic spacing change value as necessary to reflect transducing head wear (paragraph 27).

Claims 2 and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith U.S. Patent Application Publication No. 2002/0197936 in view of Dakroub et al U.S. Patent No. 7,113,354.

Regarding claim 2, Smith discloses a method for monitoring fly height between a magnetic recording medium and a transducing head (paragraph 26), comprising all the limitations of claim 1 as discussed above, but fails to explicitly disclose wherein the magnetic spacing change value is calculated from media noise sensed on the recording medium.

Dakroub et al however, disclose a method for monitoring fly height between a magnetic recording medium and a transducing head wherein media noise (i.e., readback signal on a nonrecorded region of the medium) is detected for the purpose of achieving the ability to

identify, remove, and replace marginal components from a storage device prior to shipment (column 2, lines 11-17).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the method of sensing media noise on a magnetic recording medium into the method of detecting fly height of Smith in order to efficiently identify, remove, and replace marginal components from a storage device prior to shipment.

Regarding claims 4-6, Smith as modified by Dakroub et al disclose a method for monitoring fly height between a magnetic recording medium and a transducing head comprising all the limitations of claim 2 as discussed above, but fail to show the details of the steps for measuring spacing change and detection of media noise. However, it is considered that using a Fast Fourier Transform conversion process for obtaining a signal frequency, using a spectrum analyzing process, and analyzing frequency components of a signal are well known techniques used for detecting spacing change. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made since one with ordinary skill could have pursued the known options of using said well known techniques for detecting a spacing change with reasonable expectation of success.

Regarding claim 7, Smith discloses a method for monitoring fly height between a magnetic recording medium and a transducing head (paragraph 26), comprising all the limitations of claim 1 as discussed above, but fails to explicitly disclose wherein transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than transducing head wear.

Dakroub et al however, disclose a method for monitoring fly height between a magnetic recording medium and a transducing head wherein a head signal amplitude is determined taking into account the changes that occur to a readback signal amplitude when a transducing head approaches a recording medium surface, for the purpose of achieving the ability to identify, remove, and replace marginal components from a storage device prior to shipment (column 5, lines 10-18).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the method of sensing media noise on a magnetic recording medium into the method of detecting fly height of Smith in order to efficiently identify, remove, and replace marginal components from a storage device prior to shipment.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith U.S. Patent Application Publication No. 2002/0197936 in view of Dakroub et al U.S. Patent No. 7,113,354 and further in view of Abraham et al U.S. Patent No. 6,239,936.

Regarding claim 3, Smith as modified by Dakroub et al disclose a method for monitoring fly height between a magnetic recording medium and a transducing head comprising all the limitations of claim 2 as discussed above, but fail to explicitly show wherein the media noise is processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head.

Abraham et al however, disclose a method for monitoring fly height comprising filtering electronic noise from a spacing signal for the purpose of obtaining an improved spacing signal (column 10, lines 35-42). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method for monitoring fly height

disclosed by Smith as modified by Dakroub et al with the teachings of filtering electronic noise from a spacing signal of Abraham et al in order to obtain a noise-free, improved spacing signal.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith U.S. Patent Application Publication No. 2002/0197936 in view of Muranushi et al U.S. Patent No. 5,153,785.

Regarding claim 10, Smith disclose a method for monitoring fly height between a magnetic recording medium and a transducing head comprising all the limitations of claim 1 as discussed above, but fail to explicitly disclose wherein the magnetic recording medium is a magnetic tape and the transducing head is a tape head.

Smith discloses a magnetic recording medium and a transducer head configured for use in a magnetic disk drive. However, Muranushi et al disclose a method for monitoring fly height which is compatible with both a magnetic disk drive and a magnetic tape drive. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method of monitoring fly height disclosed by Smith with the teachings of configuring such a method for use in a magnetic tape drive as shown by Muranushi et al since one with ordinary skill could have pursued the known options of using the method disclosed by Smith in a magnetic tape drive with reasonable expectation of success.

Claims 21, 22, and 24-26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dakroub et al U.S. Patent No. 7,113,354 in view of Smith U.S. Patent Application Publication No. 2002/0197936.

Regarding claim 21, Dakroub et al disclose a method for monitoring fly height between a magnetic recording medium and a transducing head comprising sensing media noise on the

recording medium (column 5, 10-15) and calculating a magnetic spacing change value (i.e., distinct media landing noise signature) from the media noise (column 5, lines 15-18), but fail to explicitly disclose adjusting a magnetic spacing change value as necessary to reflect transducing head wear.

Smith however, discloses a method comprising adjusting magnetic spacing between a magnetic recording medium and a transducing head for the purpose of burnishing a head (paragraphs 24 and 28). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method disclosed by Dakroub et al with the teachings of burnishing a transducer head as shown by Smith in order to minimize fly height while increasing data density.

Regarding claim 22, Dakroub et al disclose a method for monitoring fly height between a magnetic recording medium and a transducing head wherein the media noise (i.e., readback signal from a nonrecorded region of the medium) is generated by forming a substantially random pattern of magnetic domains on the recording medium using one of an A.C. erasure technique, a D.C. erasure technique, or a bulk erasure technique (column 5, lines 4-9). It is considered inherent that media noise is generated from one of an A.C. erasure technique, a D.C. erasure technique, or a bulk erasure technique since a nonrecorded region of a conventional magnetic disk is subject to such techniques during manufacture.

Regarding claims 24-26, Dakroub et al disclose a method for monitoring fly height between a magnetic recording medium and a transducing head comprising all the limitations of claim 21 as discussed above, but fail to show the details of the steps for measuring spacing change and detection of media noise. However, it is considered that using a Fast Fourier

Transform conversion process for obtaining a signal frequency, using a spectrum analyzing process, and analyzing frequency components of a signal are well known techniques used for detecting spacing change. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made since one with ordinary skill could have pursued the known options of using said well known techniques for detecting a spacing change with reasonable expectation of success.

In response to the previous Office action mailed December 20, 2007, Applicant requested appropriate prior art to support Examiner's assertion of the well-known techniques mentioned above. In response, Examiner points to Okamura U.S. Patent No. 5,831,781 in which it is evidenced that fly height changes are well-known to be determined through spectrum analysis (column 2, lines 27-35). Furthermore, it is documented by Kijesky et al U.S. Patent No. 4,408,284 that use of a Fast Fourier Transform is a common technique used in spectrum analyzers (column 2, lines 55-62). Finally, Rittenbach U.S. Patent No. 3,398,364 sets forth a spectrum analyzer comprising means for comparing a plurality of frequency components of a reference signal.

Regarding claim 28, Dakroub et al as modified by Smith disclose a method wherein transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than head wear (Smith, paragraph 26).

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dakroub et al U.S. Patent No. 7,113,354 as modified by Smith U.S. Patent Application Publication No. 2002/0197936 and further in view of Abraham et al U.S. Patent No. 6,239,936.

Regarding claim 23, Dakroub et al as modified by Smith disclose a method for monitoring fly height between a magnetic recording medium and a transducing head, but fail to explicitly show wherein the media noise is processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head.

Abraham et al however, disclose a method for monitoring fly height comprising filtering electronic noise from a spacing signal for the purpose of obtaining an improved spacing signal (column 10, lines 35-42). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the method for monitoring fly height disclosed by Dakroub et al as modified by Smith with the teachings of filtering electronic noise from a spacing signal of Abraham et al in order to obtain a noise-free, improved spacing signal.

(10) Response to Argument

Claim 1

As a preliminary matter, Appellant argues with regards to a telephonic interview conducted with the Examiner on March 17, 2008, in which, Appellant contends, "it was tentatively agreed that Claim 1 is not anticipated by Smith" and "The final office action does not explain what changed the examiner's mind". Examiner disagrees with the above statement since in said telephonic interview, no agreement was reached. In the interview, Examiner heard Appellant's arguments with regards to the rejection and indicated to Appellant that said arguments were reasonable and that the Examiner would formally consider the arguments in view of the pending rejection upon Appellant's formal filing of a response. Upon consideration of Appellant's response filed on March 17, 2008, Examiner came to the conclusion that Appellant's arguments were not persuasive and thus maintained the previous rejection in the

final Office action mailed July 22, 2008. The final Office action mailed July 22, 2008 is considered proper and detailed as to the reasons for the rejection of claim 1, particularly in the "Response to Arguments" section.

On pages 7-10, Appellant argues that Smith fails to explicitly disclose or suggest "adjusting the magnetic spacing change value as necessary to reflect transducing head wear." Appellant contends that although Smith measures magnetic spacing values, none of the spacing measurements are adjusted to reflect head wear since Smith uses the spacing measurements "to see how much more of the slider's rear pad 54 needs to be removed as part of the burnishing process." Examiner however, respectfully disagrees with Appellant's argument because in order for Smith to see how much the slider's rear pad need to be removed during the burnishing process, the amount of head wear need to be known. In Figure 4, Smith discloses the steps of measuring an initial magnetic spacing change value (step 84), burnishing the slider (step 86), then measuring a second magnetic spacing change value (step 88), in order to determine the amount of head wear achieved through the burnishing step. It is noted that measuring the second magnetic spacing alone does not yield the head wear value desired by Smith. Smith discloses that the head wear is determined through an evaluation of the second magnetic spacing measurement relative to the initial magnetic spacing measurement. It is considered disclosed by Smith that in order to reflect head wear, the second magnetic spacing measurement is adjusted with respect to the initial magnetic spacing measurement (see paragraph 28, lines 7-11).

Appellant further argues that the claimed "adjusting" cannot reasonably be equated to Smith's "evaluating". Examiner however, respectfully disagrees since as pointed out in Appellant's Appeal Brief on pages 8 and 9, head wear is not determined by merely measuring a

magnetic spacing. Appellant's magnetic spacing is adjusted by taking into account a secondary value (i.e., a change in stripe height) in order for the magnetic spacing to reflect head wear. Therefore, it is considered that the claimed "adjusting" can reasonably be considered to read on Smith's adjustment of the second magnetic spacing measurement relative to the initial magnetic spacing measurement to reflect head wear.

Appellant further contends that Smith fails to disclose or suggest a method of adjusting magnetic spacing to account for transducer head wear in order to improve fly height measurement accuracy. Examiner respectfully disagrees since the recitation in the claim "for monitoring fly height between a magnetic recording medium and a transducing head" is not given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim 2

On pages 12 and 13, Appellant argues that Smith and Dakroub et al. fail to explicitly disclose or suggest any form or adjusting a magnetic spacing change value. However, Examiner respectfully disagrees for the reasons set forth above with regards to claim 1. Furthermore, it is noted that, although Smith fails to disclose during manufacture of a storage device, calculating a magnetic spacing change value from media noise sensed on the recording medium, Smith discloses measuring magnetic spacing change values through a number of known techniques,

such as magnetic spacing, thermal spacing, MR resistance, and slider vibrations. Dakroub et al discloses that a spacing between the head and the medium can be achieved be measuring media noise sensed on the recording medium for the purpose of identifying problems or compensating for problems caused by components installed into the storage device during manufacture. Therefore, it is considered to have been obvious to one having ordinary skill in the art at the time the invention was made implement the method of sensing media noise on a magnetic recording medium, disclosed by Dakroub into the method of detecting fly height of Smith in order to efficiently identify, remove, and replace marginal components from a storage device prior to shipment.

Claim 4

On page 13, Appellant argues that "Claim 4 should be allowable based on its dependence from claims 1 and 2." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 1 and 2.

Claim 5

On page 13, Appellant argues that "Claim 5 should be allowable based on its dependence from claims 1 and 2." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 1 and 2.

Claim 6

On page 14, Appellant argues that "Claim 6 should be allowable based on its dependence from claims 1 and 2." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 1 and 2.

Claim 7

On page 14, Appellant argues that "Claim 7 should be allowable based on its dependence from claim 1." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 1 and 2. Furthermore, as detailed in the previous Office action, although Smith fails to explicitly disclose wherein transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than transducing head wear, Dakroub et al disclose a method for monitoring fly height between a magnetic recording medium and a transducing head wherein a head signal amplitude is determined taking into account the changes that occur to a readback signal amplitude when a transducing head approaches a recording medium surface, for the purpose of achieving the ability to identify, remove, and replace marginal components from a storage device prior to shipment (column 5, lines 10-18). Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to implement the method of sensing media noise on a magnetic recording medium into the method of detecting fly height of Smith in order to efficiently identify, remove, and replace marginal components from a storage device prior to shipment.

Claim 3

On pages 14 and 15, Appellant argues that "Claim 3 should be allowable based on its dependence from claims 1 and 2." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 1 and 2. Furthermore, Appellant argues the Abraham et al. individually. It is noted that one cannot show nonobviousness by attacking references

individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Claim 10

On page 16, Appellant argues that "Claim 10 should be allowable based on its dependence from claim 1." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 1.

Claim 21

On page 16, Appellant argues that Dakroub et al fail to disclose or suggest "calculating a magnetic spacing change value from the media noise" because Dakroub et al can only detect fly height in the sense of determining from the shape of a white noise readback signal that a head crash is imminent. First, it is noted that one of the features upon which Appellant relies to argue the rejection (i.e., monitoring fly height) is a limitation in the preamble of the claim and is not given patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). Second, Dakroub et al disclose a detecting from media noise a change in magnetic spacing, in this case a distinct media landing noise signature, which specifically indicates when a head is about to contact the media (column 5, lines 15-18).

Furthermore, Appellant argues that Smith fails to disclose or suggest "adjusting said magnetic spacing change value as necessary to reflect transducing head wear." As discussed with regards to claim 1, Examiner respectfully disagrees since in Figure 4, Smith discloses the steps of measuring an initial magnetic spacing change value (step 84), burnishing the slider (step 86), then measuring a second magnetic spacing (step 88), in order to determine the amount of head wear achieved through the burnishing step. It is noted that measuring the second magnetic spacing alone does not yield the head wear value desired by Smith. Smith discloses that the head wear is determined through an evaluation of the second magnetic spacing measurement relative to the initial magnetic spacing measurement. It is considered disclosed by Smith that in order to reflect head wear, the second magnetic spacing measurement is adjusted with respect to the initial magnetic spacing measurement (see paragraph 28, lines 7-11).

Claim 22

On page 17, Appellant argues that "Claim 22 should be allowable based on its dependence from claim 21." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 21. Further, Appellant argues that Dakroub et al and Smith fail to disclose or suggest using an erasure technique to form noise generating magnetic technique. Examiner however, respectfully disagrees since Dakroub et al disclose detecting media noise from a nonrecorded region of the medium. Conventional magnetic disk drives, are subject to erasure techniques during manufacture or prior to shipment to erasure techniques such as A.C., D.C. or bulk erasures for the purpose of conditioning a magnetic surface for servo writing and data recording. Such erasure techniques create randomized magnetic patterns on the magnetic disk surface, which remain until data is recorded thereon. Therefore, it is considered inherent in

Dakroub et al that since Dakroub accesses media noise from nonrecorded areas (column 5, lines 4-9, said media noise is generated using one of an A.C. erasure technique, a D.C. erasure technique, or a bulk erasure technique.

Claim 24

On page 17, Appellant argues that "Claim 24 should be allowable based on its dependence from claim 21." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 21.

Claim 25

On page 17, Appellant argues that "Claim 25 should be allowable based on its dependence from claim 21." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 21.

Claim 26

On page 18, Appellant argues that "Claim 26 should be allowable based on its dependence from claim 21." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 21.

Claim 28

On page 18, Appellant argues that "Claim 28 should be allowable based on its dependence from claim 21." Examiner respectfully disagrees, for the reasons set forth above with regards to claims 7 and 21.

Claim 23

On page 19, Appellant argues that "Claim 23 should be allowable based on its dependence from claim 21." Examiner respectfully disagrees, for the reasons set forth above

with regards to claims 7 and 21. Furthermore, Appellant argues the Abraham et al. individually. It is noted that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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